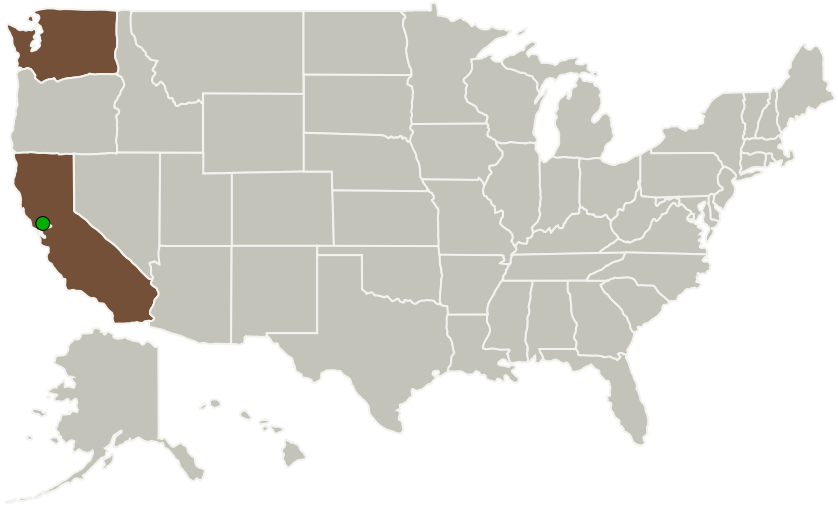
Instrument for Measurement of Oceanic Particle Size Distribution from Submicron to Mesoplankton, Phase II

Completed Technology Project (2016 - 2019)

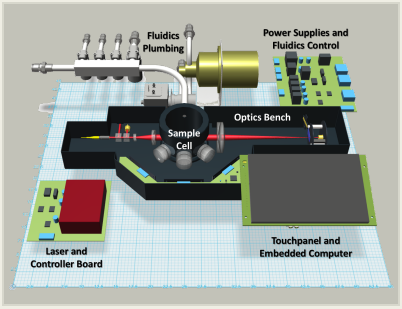
Project Introduction

Particle size distribution (PSD) is a fundamental environmental measurement, with diverse biogeochemical applications including carbon cycle science, ecosystem and fisheries modeling, and harmful algal bloom (HAB) detection/prediction. There is optimism that estimates of PSD will be available from ocean color measurements (such as NASA's upcoming PACE mission), and will be able to help constrain global-scale ecosystem/carbon models and estimates of primary production. However, natural PSD variability is not well understood due to the challenges of routine measurement, and there exists little field data over large space and time scales. We propose to bridge this gap by developing an instrument for ship-based flow-through application that uses laser scattering from multiple wavelengths for estimation of the PSD across a wide range of particle sizes from 0.1 to 500 micron, covering a range from the smallest oceanic pico-plankton to larger meso-plankton.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Sequoia Scientific, Inc.	Lead Organization	Industry	Bellevue, Washington
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California



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Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
California	Washington

Project Transitions

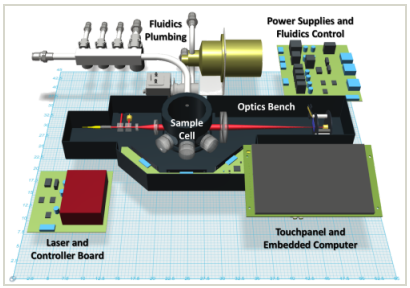
April 2016: Project Start

January 2019: Closed out

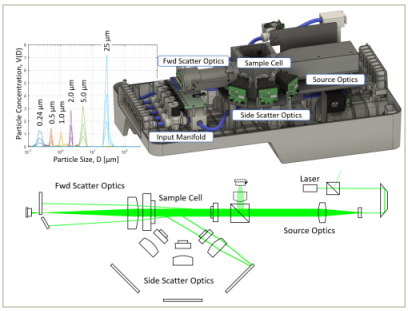
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139482)*

Images



Briefing Chart Image
Instrument for Measurement of Oceanic Particle Size Distribution from Submicron to Mesoplankton, Phase II
(https://techport.nasa.gov/image/131951)



Final Summary Chart Image
Instrument for Measurement of Oceanic Particle Size Distribution from Submicron to Mesoplankton, Phase II
(https://techport.nasa.gov/image/128380)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Sequoia Scientific, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

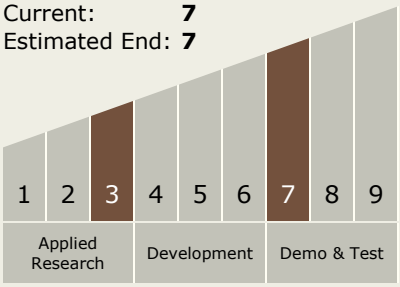
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Wayne H Slade

Technology Maturity (TRL)

Start: **3**
Current: **7**
Estimated End: **7**



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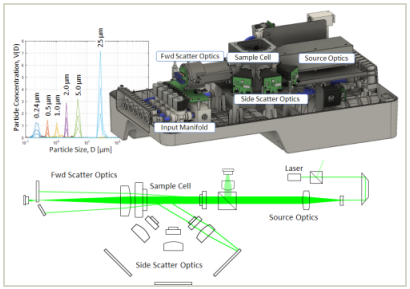
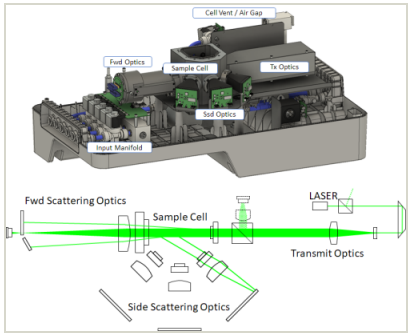


Final Summary Chart Image
Instrument for Measurement of Oceanic Particle Size Distribution from Submicron to Mesoplankton, Phase II
(https://techport.nasa.gov/image/129382)



Final Summary Chart Image
Instrument for Measurement of Oceanic Particle Size Distribution from Submicron to Mesoplankton, Phase II
(https://techport.nasa.gov/image/126666)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System